Accident Analysis – 1988

DIVING INCIDENTS 1988

AA – drowning February 7, 1988

Orange Grove Sink, Florida

On Sunday, February 7, three divers entered Orange Grove Sink in Suwannee County, Florida. They proceeded into the lower cavern. They used no guideline. JG led the group. He had a single 80 with no octopus, a single light (UK600) and was advanced open-water certified (PADI) with 20 dives over an 18 month period, but was neither cavern nor cave certified. Followed by one companion, he passed two major constrictions at the bottom of the cavern, getting into a small chamber. Apparently he decided to tum back at that point and communicated to his companion via his slate: “Nothing here, let’s leave.” His companion managed to back out of the totally silted condition, but JG tried to ascend vertically through a tight hole, and ran out of air.

The body was recovered later that day by divers who got directions from the survivors, reached the location, and, turning their lights out, could see the glow of JG’s light. The body was at a depth of 120 feet.

Reference: Dustin Clesi “Orange Grove Sink Body Recovery” Underwater Speleology February, 1988, pgs 14 – 15.

AA – embolism May 15, 1988

Little Dismal Sink, Florida

On Sunday, May 15 a group of divers was at Little Dismal Sink, in Leon County, Florida. They were working on the map of the Little Dismal Cave System the day’s dive was intended to collect survey data for the last bit of the upstream and downstream tunnels of what is called the Sixth Room – part of the “deep section.” There apparently were three separate parties of divers in the cave at the same time.

PT and SB collected rock samples in the First Room, BG motored ahead to the downstream tunnel, and BMcF and BM went to the upstream tunnel to finish the survey in that area.

The upstream tunnel is low in places and very silty. BM led, laying new knotted survey line while BMcF followed doing the compass work and taking notes on the survey slate. At one point

BMcF's battery pack fouled the line and BM swam back to help. A short time later the line was snarled again, this time on BMcF's safety reel. This was quickly fixed. They continued the survey. Finally, BM signaled to end the survey and they turned back, BM leading with BMcF's close behind. Several times the visibility was zero and holding the line was necessary. Several times BM turned around to check on BMcF's.

At the Sixth Room, BM turned around but BMcF was not in sight. "Moments" went by and BM became concerned. As he was about to go back and check, he saw a fight approaching – it was BG. He had finished his downstream survey and was heading for the Fifth Room. BM swam over and communicated that BMcF was still in the upstream tunnel. BG quickly swam up the line, soon hit clearer water and found BMcF, off the line but apparently all right. The two rejoined BM, waiting in the Sixth Room. Everything seemed fine.

All three headed for the Well, the bottom of the fifth Room. They had been operating at 220 feet and bottom time had been extended and valuable air used up in the delay looking for BMcF. At the Well BG hooked up to his "deep-modified DPV" to begin his exit.

At this point BMcF flashed BG that he was out of air. BG Immediately gave BMcF his long hose and began to share air. BG started up the Well and began venting his drysuit, to moderate his speed. This had no effect, as BMcF was hanging onto BG's manifold and had lost control of his drysuit. They didn't stop rising until they were in the bell ceiling of the Fifth Room at a depth of 100 feet. They had risen 80 feet rather rapidly. BM had grabbed BMcF's legs to try to control the buoyancy problem. BG tried to get BMcF to switch to BM's air but BMcF would not release the manifold. BG was down to 1000 psi and wanted to head out – It was only 700 feet to the entrance but he was sharing air.

BG powered his way down from the Fifth Room bell ceiling with the DPV with BMcF and BM hanging on. They proceeded through the Fourth Room, the "shortcut" and into the Second Room. They were making progress but BMcF was "breathing hard" and BG realized this was going to be close.

Going through the duck under to the First Room there was another sudden ascent from 110 feet to 60 feet depth – BMcF's drysuit buoyancy was still out of control. BM thought about knifing it, but felt that the sudden rush of cold water into it might panic BMcF and make things worse.

They reached the Balcony and entered the low bedding plane passage before the restricted portion at the cave entrance. BG's regulator started breathing harder and harder – it occurred to him that even this close to the entrance they could still drown.

With lungs burning, BG looked over at BM and saw that he had only one regulator – BMcF had switched to BM's long hose. Now two divers were out of air with the restriction still to go through.

"BM realized that BG was hurting badly and quickly gave him his regulator. Taking three breaths, BG was numbed by the lack of air, stressed and barely coherent."

At this point BMcF let go and they realized he had passed out. BG was concerned he would not make it out alive but BM grabbed BG and in minutes had pulled him through the restriction and to their decompression stop with oxygen bottles. They went through their very long decompression burdened by the "mental horror that just took place."

References:

1) Karen Thurston "Cave diver feared dead in accident" Tallahassee Democrat May 16, 1988.

2) Steve Gerrard "We Lost Our Friend" NACO News May-June 1988, (20)3, pgs. 27-30.

3) Ed. "Little Dismal Drowning" Underwater Speleology May/June 1988, (15)3 p 15.

Analysis: The operating depth of the dive, 220 feet, was extraordinary and BG and BM had been recruited for the survey project because of their "tremendous experience" with deep dives. BMcF "had done many, many deeper dives prior to this one." He had logged 40 dives in Little Dismal, 15 at deeper depths. An autopsy later showed that BMcF had suffered an embolism in the brain.

D – Equipment lack May 28, 1988

Orange Grove Sink, Florida

Three people entered Orange Grove Sink in Suwannee County, Florida, on May 28. They were equipped only with masks and fins. Two shared a scuba tank with two regulators and one had a pony bottle and regulator.

The diver with the pony bottle ran out of air and made a "mad dash" for the surface. He was almost intercepted by one of the others who tried to grab his leg. At the surface he was observed by passing cave divers and, though coughing some, apparently had not suffered an embolism.

Reference: Frank Lavelle "Letters to the Editor" Underwater Speleology July/August 1988, p 25.

AA – drowning June 11, 1988

Blue Springs, Florida

On Saturday, June 11, a group of four divers entered Blue Springs, Madison County, Florida. Three were U.S. Navy personnel and the fourth was the teen-age son of one of the group. They were not trained in cave or cavern diving and had only standard open-water equipment, plus minimal lights.

They entered the Horseshoe Room "daylight zone" and found the ledge that leads down into the "Crossunder Tunnel." Three proceeded into the tunnel for some 350 feet, stirring up silt in the process. They became disoriented and only one was able to make his way back to the daylight zone. The other two apparently "followed a jump line laid by cave divers back to the permanent line, ran out of air, and drowned."

The surviving two (the teenager and presumably his father) were able to recover one body. The other was found by two certified cave divers from Tallahassee who were exiting the upstream "Main Tunnel" about thirty minutes after the drowning. While swimming across the Horseshoe Room, they noticed a scuba tank on the floor at the mouth of the Crossunder Tunnel (the other report states that the tank was across their line, as if for staging but they had made no prior agreement with other divers to share their line, nor was there a line clip, so they became suspicious and looked around). They expected to find a cave diver but found instead the drowned diver up near the ceiling.

References:

1) Ed. "Double Drowning at Blue Springs- Madison County" NACD Newsletter July-August, 1988, p 41.

2) Ed. "On the Darker Side…" Underwater Speleology July/August, 1988, p22.

AA-drowning June 18, 1988

Arch Spring Cave, Pennsylvania

(currently being compiled)

AA – June 19, 1988

Chacalal Cave, Mexico

On June 19, two men undertook a dive in Chacalal Cave at Chacalal Lagoon near Akumal, Mexico. They intended to recover scuba gear left from the double fatality of May 3, 1987. They had no cavern or cave training, only one light apiece, and apparently did not apportion their air in any particular way. Both were using twin tanks yoked together with only a single outlet. Their guideline system is described as "bizarre and unorthodox." Apparently the end of the line was secured at the entrance, then they proceeded with the lead diver having the line over his shoulder with the second diver following with the spool. Thus the lead diver acted as a pulley, with the line going from his shoulder back to the entrance and to the spool.

They proceeded into the cave; apparently about 200 feet in the second diver panicked. In any case, the lead diver lost the line and the second headed for the entrance. In the low visibility, silted conditions of the passage, the leader was lost.

Apparently the second diver exited very quickly and notified an instructor at the Kapulum Dive Shop who called an American diver, Jim Coke, who was in the area. They proceeded to the cave immediately, thinking that the lost diver still had air left. At 6 p.m. they entered the water – two hundred feet in they encountered the body of the lost diver. He had run out of air and apparently panicked as he died, since his "fingers appeared to have clawed at the rock."

The body was recovered as well as the diver's equipment and that from the fatality of the previous year and all lines previously installed. The cave and lagoon are now closed to divers.

References:

1) Ed. "On the Darker Side…" Underwater Speleology July/August 1988, (15)4, p 22.

2) Mike Madden "Fatality in Chacalal Cave, Mexico" National Association for Cave Diving Jul-Aug, 1988, p 46.

AA – July 3, 1988

Little River Springs, Florida

On Sunday, July 3, a diver was exploring solo in the Little River Springs Cave System. He apparently was not cave or cavern certified and had been on only 40 dives in the previous twenty years. His body was discovered by accident the following day by a team of divers from Virginia in the "Mud Tunnel."

References:

1) Ed. "Drowning at Little River Springs" NACD Newsletter Jul-Aug 1988, p 41.

2) Ed. "On the Darker Side…" Underwater Speleology.

AA – July 19, 1988

Ottawa River System, Quebec, Canada

During the last two weeks of July a cave diving camp was held by the SQS (Speleological Society of Quebec) at certain springs on islands near the middle of the Ottawa River just inside the province of Quebec in Canada.

On the 19th of July JL and LL entered one of these springs via a small surface pool. They penetrated 90 meters upstream, laying guideline. The passage was some 2 meters high and 5 meters wide, with the maximum depth some 6 meters below the surface. At the end of their line (90 m) they turned back. JL had a minor leak in one of his regulators and he dismantled and cleaned it after reaching the surface.

They returned to the cave and surveyed the 90 meters. At the end of the fine, JL motioned to LL to start out. LeBlanc had a minor problem with the line; when he got sorted out he was no longer sure if JL was in front or behind- visibility was "poor." He continued to the entrance but JL was not there. LL went back to the end of the line and found JL, dead. His regulator was not in his mouth but his face mask was in place; there was some blood in it. He brought the body part way out, but had to leave it when he ran low on air. Body recovery was completed the next day.

Reference: K. David Sawatzky, MD "Cave Diving Fatality: Jean LaMarree" Canadian Caver 20(2}, Fall 1988, pg 4.

Analysis: JL's regulators were found by the recovery team to be working and his tanks still contained air. Sawatzky speculates that JL may have suffered a nose bleed and suffocated or may have had a heart malfunction – ruptured aneurysm or ventricular fibrillation and secondary heart attack. In any case, "this tragic fatality simply reinforces the extreme risk of cave diving and shows how even a simple event may be fatal in this environment."

AA – September 5, 1988

Orange Grove Sink, Florida

At 10:11 p.m. on September 5, MH and DE entered Orange Grove Sink, Suwannee County, Florida, for their third dive of the day. MH was Basic Cave certified in May and DE on July 3. When they discussed their plans for the dive with their instructor and others, they were warned that they were not ready. DE had logged only ten cave dives and was diving with rental gear.

They planned to head toward Challenge Sink, turning back if silting occurred. They knew that DE's primary light would not last the dive and they brought a UK 1200 to use when the primary gave out.

The pair proceeded past the halfway point; apparently silting occurred and they turned back as planned. When DE's primary light expired, the UK 1200 was turned on, but during the exchange they drifted away from their line. With the light on, they turned their attention back to the line and regained it – but it was not the one they had followed. They used the line for a time, came to realize it was not correct – a slate note was exchanged – and turned back. Presently DE saw another line and went for it. Silting had now brought visibility to near zero. MH made a fine search but could not find DE. MH then made his way back along the "Wrong" line to the correct line and exited.

Reference: Ed. "Fatality at Orange Grove Sink" Underwater Speleology Nov-Dec 1988, 15:6, p 5-6.

Analysis: Underwater Speleology cites: 1) (lack of) Training- Both divers were diving well above their level of training. By definition of "Basic Cave" (certification) they should not have gone to twin tanks nor to diving in the advanced-cave conditions of Orange Grove Sink. 2) (lack of a) Continuous line – During the exchange of lights they lost sight of the continuous line. This slight error proved to be a fatal one.

AA – December 15, 1988

Emerald Sink, Florida

On December 15, a group of three divers, all "Basic Cave Certified," entered Emerald Sink in Wakulla County, Florida. They were led by BC, reportedly having experienced some 100 to 125 cave dives. BC used twin, side-mounted 80's while the others used dual-manifolded double 80's.

They penetrated the cave for some 800 feet, using a line already laid by other divers and passing one line junction, to a depth of 150 feet, when BC decided they had gone far enough and signaled "turn around." They began to exit. When they reached the line junction they had passed on the way in, they proceeded following a line that was marked with exit arrows.

Near the entrance BC flashed the other two and signaled that they were going the wrong way. With misgivings, but because he was the leader, BC's companions turned and followed him back into the cave.

Back at the line junction, "he pointed into a deep tunnel which (actually) led to Clear Cut Sink, some 500 feet away. His companions were now frightened – their air was running low and they were sure the line with the arrows was correct. They could not convince or perhaps communicate this to BC, however, so they split up, BC heading deeper into the cave. His companions made it out, but without enough air to complete decompression. They had oxygen available on the surface and suffered no reported bends symptoms.

BC was found by recovery divers about 300 feet from the entrance at about 117 foot depth, in a pocket in the ceiling. The guide line at that point was at 145 foot depth.

Reference: Ed. "Drowning at Emerald Sink" Underwater Speleology Jan/Feb 1989 (16)1, pgs. 6-7.

Analysis:

The maximum on BC's depth gauge read 160 feet- this apparently indicates he proceeded another 200 feet into the cave from the line junction where his party split up. There was 150 psi in one tank and 350 psi in the other. Both regulators seemed to be "significantly out of

adjustment.” The ambient bleeds were both clogged so they would have “breathed poorly at depth and probably contributed to his (apparently) probable narcosis.”

A good number of safety rules were violated and these are listed here, quoted from the above source, though one must remember that equipment malfunction and resulting narcosis is apparently what really caused the fatality.

1) Failed to reserve adequate air for the exit. Knowing that they were entering a siphon, their dive plan was to dive in to 1/3 of their air or 20 minutes, whichever came first Siphons require additional air reserves beyond thirds because of Increased swimming resistance during exit due to the siphon flow. Because of this added hazard, siphons are considered especially deserving of respect and are approached very conservatively by safety-minded cavers.

2) Exceeded the penetration limits allowed for Basic cave certification. Basic Cave parameters allow a maximum penetration of no more than 1/3 of a single tank or 1/6 of doubles. The dive was planned around 1/3 of twin 80’s.

3) Exceeded the depth limits allowed for Basic Cave certification. Basic Cave depth parameters are 100’. The planned portion of the dive went to approximately 150′. It is considered likely that the difficult breathing resistance of the poorly maintained regulators caused BC to be significantly narked (much more than would be normal) even at this depth.

4) Violated the Basic cave restriction prohibiting decompression dives. The dive was planned to be well beyond the no-decompression limits. Also, decompression bottles were not left at the depth of the first anticipated stop, which means that the intention was to decompress on emergency reserve air.

5) Failure to check gear and/or be familiar with its proper operation. Checking the ambient first-stage pressure bleeds on Sherwood regulators is a routine pre-dive check item. The fact that they were not working indicated either pre-dive forgetfulness or carelessness, or Ignorance of the proper functioning of the regulators. Although BC was found to have been using his operational primary light when he died, tests of his back-up fights showed that the batteries in all of them were low, and therefore poorly maintained and not well-checked before the dive.

6) Violated equipment configurations stipulated for Basic Cave. BC was wearing two single 80’s attached low on his hips in the British side-mount fashion, an advanced technique which requires additional hoses and complicated regulator exchanges and gauge monitoring. It is hypothesized that the additional stress and time factors associated with performing the necessary regulator switches may have compromised BC’s ability to deal with the narcosis Induced by poor regulator performance, and slowed down his final attempt to exit from the cave. It is speculated that his chances of surviving the cave dive might have been enhanced had he been diving a standard dual-valve rig. Side-mounts are an advanced form of dive technique that are way beyond the scope of anyone who only has Basic Cave certification.

7) Encouraged other divers to violate the dive parameters of their certification skills. BC was the “leader” on this dive, and though he knew the others were only Basic Cave certified (like

himself), encouraged them to participate on a deep decompression siphon dive on doubles. It is reported that on other occasions BC had helped other Basic Cave certified divers rig themselves for side-mount diving and in other ways “instruct” them in advanced cave-diving techniques. It is also reported that several instructors, including his Basic Cave Instructor, encouraged him repeatedly to complete the full training course before attempting to do dives that went beyond the parameters of Basic Cave Diver certification, but to no avail. it has also been suggested that this was very nearly a triple drowning.